Introduction

This guide describes the type of information needed to evaluate an application for a specific license for receipt, possession, use, and transfer of radioactive material contained in portable gauging devices, such as moisture-density gauges and X-ray fluorescence analyzers. The regulations listed below were used for the preparation of this guide. You will receive for reference purposes Chapters 246-220 through 246-255 WAC (the Radiation Regulations) when your new license is delivered. You should have a copy available if this is a renewal application. This guide does not substitute for an understanding of the regulations.

1. WAC 246-221 “Radiation Protection Standards”

2. WAC 246-222 “Radiation Protection - Worker Rights”

3. WAC 246-232 “Radioactive Material - Licensing Applicability”

4. WAC 246-254 “Radiation Protection - Fees”

5. 10 CFR (Code of Federal Regulations) part 71, “Packaging and Transportation of Radioactive Material."

Filing an Application

The information submitted must be sufficient to allow the department to determine that the proposed equipment, facilities, procedures, and controls are adequate to protect health and minimize danger to life and property. Information submitted should pertain to the specific activities for which authorization is sought and should be complete. Submission of incomplete information will result in delays because of the correspondence necessary to obtain supplemental information.

Since licensees are required to comply with department rules and regulations, license conditions, and the content of the submitted applications, at least one copy of all information submitted to the department must be kept by the applicant for reference.

Radioactive Materials License Application Form RHF-1PG

Two copies of the Application Form RHF-1PG should be completed following the instructions given hereafter in this guide. The original copy should be filed with this Division and one kept by the applicant. Since the space provided on the form is limited, additional sheets should be appended as necessary. Supplemental information should be labeled to identify the applicant and reference the items for which information is being given.

A license fee is required. Consult the supplemental license fee information mailed to you along with this application packet on how to compute your license fee. To apply for a new radioactive materials license for portable gauging devices, enclose a check or money order payable to Department of Health (no cash) for the amount of fee, and mail fee and **original copy** of the completed RHF-1PG form (with attachments) to the address given in the supplemented licensing fee information. However, if this is a renewal application, your annual fee will be billed separately and only the completed RHF-1PG need be sent to:

State of Washington,
Department of Health
Division of Radiation Protection
P O Box 47827
Olympia, Washington 98504 7827

Item 1. Applicant and Locations of Use. The applicant, corporation, or other legal entity should be specified by name and mailing address in Item 1(a). Individuals should be designated as the applicant only if they are acting in a private capacity and the use of radioactive material is not connected with their employment for a corporation or other legal entity.

The actual sites of use must be given in 1(b) and 1(c). The permanent facility where device(s) are to be stored and records kept must be identified in 1(b).

Use of the device is also permitted at this facility. You must indicate street address (no P.O. Box), city, state and zip code in 1(b). If temporary use of the device is required away from the permanent facility identified in 1(b) you must indicate this in 1(c). Overnight storage at temporary job sites in the state of Washington is generally allowed where return to the permanent facility for storage is inconvenient and when such temporary overnight storage does not exceed 30 days.

Attach additional properly keyed sheets if more space is needed.

Reciprocal recognition of a Washington State Radioactive Materials License in other states may be acquired by contacting the regulatory agency in charge of radiation control in the state concerned (e.g., the U.S. Nuclear Regulatory Commission, if the state is a Non-Agreement State, or the state Radiation Control Agency, if the state is an Agreement State).

Item 4. Individual Users. Indivdual users need not be specifically named, however an authorized individual user must be present and directly supervise use at any job site. User qualifications must include, at a minimum, the completion of an approved training course or program.

If the applicant desires to provide in-house training for his own personnel, a detailed training program must be attached for Department review and approval.

Item 5. Radiation Safety Officer. A radiation safety officer shall be named in Item 5a (include training certificates). A signed statement (Attachment A or equivalent) must be included with the application outlining the named individual's duties and responsibilities. The appropriate choice must be indicated in Item 5b. The radiation safety officer is expected to coordinate the safe use of the nuclear gauging devices and ensure compliance with the requirements of Washington Administrative Code (WAC) 246 Chapters 221, 222, and 232, License Conditions, and applicable Department of Transportation regulations.

Items 6, 7, and 8. Radioactive Material and Sealed Source Description. Each sealed source to be used in a given gauge or device should be specified by nuclide (for example, Cesium-137, Americium-241, etc.), manufacturer and model number of each source and activity in millicuries, microcuries, or Becquerels. Itemize radioactive materials with letters (A, B, C, etc.) in 6, 7, and 8. Identify corresponding features of radioactive material in each column with like letters.

As an example:

6. Radioactive Material (Element and mass number of each.)
   A. Americium-241

7. Sealed source manufacturer and model number.
   A. Sealed sources (ABC Model Number 123)

8. Maximum activity of each source.
   A. No source to exceed 40 millicuries.

Item 9. Device and Use Description. The manufacturer's name and model number of each gauge or device utilizing the source(s) listed in Items 6, 7, and 8 must be specified and keyed (using the appropriate letter) to the listed sources. In addition, the purpose for which the gauges or devices will be used must be stated.

As an example:

9. Device and Use Description (Include in description manufacturer and model numbers in which radioactive sealed sources will be used.)
   A. To be used in ABC Inc., Model 500 moisture gauge to measure surface moisture content of soils, aggregates, concrete, roofing systems, and dry-wall construction.

Item 11. Maintenance of Gauges. Radiation detection instruments such as survey meters are not normally required if the applicant plans only to use the gauges and devices for their intended use and does not plan to perform significant maintenance (other than limited maintenance as defined below) on the gauges and/or devices involving access to the sources and source holders. However, if the applicant does intend to perform maintenance, the survey instrument(s) that will be available at each site where maintenance will be performed must be specified. At least one calibrated low-range beta-gamma (0-20 or 0-50 mR/hr) survey meter must be available at each maintenance area for monitoring during and following the maintenance procedures.

If the applicant wishes to be authorized to perform maintenance and repair on gauges and devices involving access to the source holders, and/or dismantling of the shielding or shutter devices, specific information on the step-by-step procedures to be followed including radiation safety precautions must be supplied. In addition, the names of personnel and the specific pertinent training of the personnel who will be performing such maintenance and repair must be given.

"Limited maintenance" consists of cleaning and lubrication at the source rod only. Care should be taken to limit exposure to personnel while the source is exposed by using shielding, maintaining a safe distance, and minimizing time the source is out. A survey meter is not required for limited maintenance.

Items 12 and 13. Required Instrumentation. If radiation survey meters are necessary for the proposed activity, survey meter calibration provisions must be described. If the applicant intends to contract for the calibration of instruments, the name, address and license number of the calibration firm must be specified together with the frequency of the calibration (required at least every 12 months). The applicant should contact the firm that will perform the calibrations to determine if information concerning calibration procedures has been filed with the U.S. Nuclear Regulatory Commission or, as appropriate, this Department. If information has not been filed, information concerning calibration procedures must be obtained and submitted.

If the applicant intends to perform the survey instrument calibrations, state the frequency and describe the methods, procedures and equipment for performing the calibrations.

An adequate calibration of survey instruments cannot be performed with built-in check sources. Electronic calibrations that do not involve a source of radiation are also not adequate to determine the proper functioning and response of all components of an instrument.

Daily or other frequent checks of the survey instrument function must be supplemented every twelve months with a two-point calibration on each scale of each instrument with the two points separated by at least 50 percent of the maximum scale divisions. Survey instruments must also be calibrated following repair. A survey instrument may be considered properly calibrated when the instrument readings are within ± 10 percent of the calculated or known values for the points checked. Readings within ± 20 percent are considered acceptable if a calibration chart or graph is prepared and attached to the instrument.

The description of applicant's calibration procedures must include, at a minimum:

A. The manufacturer and model number of each radiation source to be used,

B. The nuclide and quantity of radioactive material contained in the source,

C. The accuracy of the source(s). (The traceability of the source to an NIST primary standard must be provided),

D. The step-by-step procedures for calibration, including associated radiation safety procedures, and

E. The name(s) and pertinent experience of person(s) who will perform the calibrations.

Item 14. Personnel Monitoring. Normally, personnel using portable moisture/density gauges are required to wear personnel monitoring devices such as film badges or thermoluminescent dosimeters (TLD). Users of devices exhibiting low radiation levels at the surface of the device, such as X-ray fluorescence analyzers, etc., are not usually required to wear personnel monitoring devices. Specify the frequency of exchange and the name and address of the supplier of the film badge or TLD service.

Moisture gauges with only Americium 241/Beryllium require only **neutron** film badges or TLD's. Moisture/density gauges with Americium 241/Beryllium and Cesium 137 or other gamma source require **gamma-neutron** film badges or TLD's. Density gauges with no neutron source require only gamma film badges or TLD's at a minimum.

Item 15. Facilities and Equipment. The applicant must provide a description of gauge or device storage at each permanent location, regional office, long term field offices, etc. Gauges must be stored in such a manner as to ensure against unauthorized removal or use as required by WAC 246-221-150. A simple annotated sketch or sketches of the permanent storage area or areas, closet(s), etc., showing relationship to actively occupied areas should be submitted. The sketch must show what is on the other side of walls adjacent to storage area.

The following measures shall be used for overnight storage at a temporary job site. The gauge must be locked and kept in its locked transport package. It must be secured in:

1. A locked pick-up canopy, or
2. A locked automibile trunk, or
3. Inside a locked vehicle, or
4. As last resort, gauge may be taken into a motel room or personal residence. This method will only be allowed during off-hours (overnight). the gauge must be returned to a vehicle and secured at the earliest opportunity.

Item 16. Radiation Safety Program. A signed Attachment B or equivalent procedures must be included to ensure compliance with the provisions of WAC 246-221 "Radiation Protection Standards" and WAC 246-222 "Radiation Protection - Worker Rights." The applicant must submit a copy of the written radiation safety and emergency procedures (Attachment C or equivalent). The procedures should be in the form of written instructions to users and must cover the following items:

A. Safety measures to be used when transporting the devices in the applicants' vehicle (for example, fully secured within the transportation vehicle and away from the passenger compartment). Transportation activities must be carried out in accordance with the requirements of 10 CFR Part 71 and Department of Transportation regulations. Shipping paper and Emergency

Procedures (in Attachment C) must be carried within arms reach of the driver.

B. Means of preventing unauthorized access, use or removal of the gauges at temporary job sites. Instructions should state that individual users are never to leave gauges unattended.

C. Means of preventing unauthorized use or removal of gauges from the designated place(s) of storage at permanent locations and at temporary job sites.

D. Emergency procedures to be followed in case of accidents involving damage or loss of the gauges or devices, including names and telephone numbers of the individual(s) within the applicant's organization who should be notified and who would, in turn, notify the local police, and state radiation protection personnel.

E. Specific instructions to the users informing them that any maintenance on the gauges involving dismantling, removal of source holder(s), etc., must not be performed by the user and must only be performed by the manufacturer of the device, unless the applicant has specifically requested authority for performing maintenance in the application and such authority is granted by the license.

F. A use log must be maintained for each gauge at the primary storage location. If the gauge is out for a length of time at a temporary job site/ storage location, a secondary use log will also be maintained at that location. The use log remains at the storage location at all times. Attachment D or equivalent must be used.

Item 17. Emergency Procedures. Attachment C or equivalent should be filled out and returned with the application. If the applicant is located in an area serviced by the 911 emergency phone system, this number may be substituted for local police and fire department phone numbers. This completed form, including the shipping paper, shall be carried with **but not in** the gauge transport box while the gauge is being transported. The applicant/ licensee must keep this information current and up-to-date.

Item 18. Leak Test Program. The applicant is required to choose from one of the three options given for this program. Check the box that is desired.

Item 19. Disposal or Transfer. In the event the sealed sources will no longer be needed, the applicant must provide for disposal or transfer. Sealed sources containing radioactive material may be returned to the manufacturer, transferred to another licensee authorized to possess the specific quantity and form being transferred, or transferred to a licensed waste disposal firm.

Item 21. Certificate. Must be filled out as indicated. It is to be signed by a facility manager (not Radiation Safety Officer) unless the RSO is also management. The title indicated should be one that identifies the signer as a manager.

Amendment and Renewal of Licenses

Application for amendment of existing licenses should be filed in the same manner as initial applications or may be filed in letter form. The application should clearly identify the license which is to be amended by license number. The exact nature of the requested changes should be specified and additional supporting information, as necessary, must be provided. Renewal applications must contain complete and up-to-date information concerning the applicant's current program.

Licenses are normally issued for a period of five (5) years. If an application for license renewal is filed thirty (30) days or more before license expiration, the existing license remains in effect until the new application has been finally acted upon.

Instructions for the Preparation of Applications for the use of Sealed Sources in Portable and Semiportable Gauging Devices

Radiation Protection Division